WHAT IS CLAIMED IS:

1. A method for canceling pilot interference at a receiver unit in a wireless communication system, comprising:

receiving a signal comprised of a plurality of signal instances, wherein each signal instance includes a pilot;

deriving total pilot interference due to one or more signal instances;

subtracting the total pilot interference from the received signal to derive a pilot-canceled signal; and

processing the pilot-canceled signal to derive demodulated data for each of at least one signal instance in the received signal.

2. The method of claim 1, wherein the total pilot interference is derived by

estimating pilot interference due to each of the one or more signal instances, and

accumulating the estimated pilot interference for the one or more signal instances.

3. The method of claim 2, wherein the pilot interference due to each of the one or more signal instances is estimated by

processing the signal instance to derive an estimate of a channel response of the signal instance, and

multiplying processed pilot data for the signal instance with the estimated channel response to provide the estimated pilot interference.

4. The method of claim 3, wherein the processed pilot data for each of the one or more signal instances is a spreading sequence for the signal instance.

5. The method of claim 4, wherein the spreading sequence for the signal instance has a phase corresponding to an arrival time of the signal instance.

6. The method of claim 3, wherein the estimated channel response for each of the one or more signal instances is derived by

despreading data samples for the received signal with a spreading sequence for the signal instance,

channelizing the despread samples with a pilot channelization code to provide pilot symbols, and

filtering the pilot symbols to provide the estimated channel response.

7. The method of claim 3, wherein the estimated channel response of the signal instance is derived based on a current segment of data samples for the received signal and the estimated pilot interference is for a subsequent segment of data samples.

8. The method of claim 3, wherein the estimated channel response of the signal instance is derived based on a current segment of data samples for the received signal and the estimated pilot interference is for the same segment of data samples.

9. The method of claim 3, wherein the estimated channel response for each of the one or more signal instances is derived based on data samples for the received signal.

10. The method of claim 3, wherein the estimated channel response for each of the one or more signal instances is derived based on data samples having pilot from the signal instance unremoved but pilots from other interfering signal instances removed.

11. The method of claim 1, wherein the processing of the pilot-canceled signal for each of the at least one signal instance includes

despreading samples for the pilot-canceled signal with a spreading sequence for the signal instance,

channelizing the despread samples with a data channelization code to provide data symbols, and

demodulating the data symbols with pilot estimates to provide the demodulated data for the signal instance.

12. The method of claim 11, wherein the pilot estimates for each of the at least one signal instance are derived based on data samples for the received signal.

13. The method of claim 11, wherein the pilot estimates for each of the at least one signal instance are derived based on data samples having pilot from the signal instance unremoved but pilots from other interfering signal instances removed.

14. The method of claim 2, wherein the pilot interference due to the one or more signal instances is estimated in a time-division multiplexed manner.

15. The method of claim 1, wherein the subtracting includes

subtracting interference samples for the total pilot interference from data samples for the received signal, wherein the interference samples and data samples are both provided at a particular sample rate.

16. The method of claim 1, wherein the pilot interference due to a signal instance being processed to derive the demodulated data is excluded from the total pilot interference.

17. The method of claim 1, further comprising:

processing the pilot-canceled signal to search for new signal instances in the received signal.

18. The method of claim 15, wherein the sample rate is multiple times a chip rate.

19. The method of claim 1, wherein the deriving the total pilot interference is performed based on segments of data samples for the received signal.

20. The method of claim 19, wherein the each segment includes data samples for one symbol period.

21. The method of claim 1, wherein the processing to derive demodulated data is performed based on segments of pilot-canceled data samples for the pilot-canceled signal.

22. The method of claim 1, wherein the deriving the total pilot interference and the processing of the pilot-canceled signal are performed in parallel.

23. The method of claim 1, wherein the deriving the total pilot interference and the processing of the pilot-canceled signal are performed in a pipelined manner.

24. The method of claim 1, wherein the wireless communication system is a CDMA system.

25. The method of claim 24, wherein the CDMA system supports cdma2000 standard.

26. The method of claim 24, wherein the CDMA system supports W-CDMA standard.

27. The method of claim 24, wherein the CDMA system supports IS-95 standard.

28. The method of claim 24, wherein the received signal comprises one or more reverse link modulated signals in the CDMA system.

29. The method of claim 24, wherein the received signal comprises one or more forward link modulated signals in the CDMA system.

30. A method for canceling pilot interference at a receiver unit in a wireless communication system, comprising:

processing a received signal comprised of a plurality of signal instances to provide data samples, wherein each signal instance includes a pilot;

processing the data samples to derive an estimate of pilot interference due to each of one or more signal instances;

deriving total pilot interference due to the one or more signal instances based on the estimated pilot interference;

subtracting the total pilot interference from the data samples to derive pilot-canceled data samples; and

processing the pilot-canceled data samples to derive demodulated data for each of at least one signal instance in the received signal.

31. The method of claim 30, wherein the processing the data samples to derive the estimated pilot interference due to each of the one or more signal instances includes

despreading the data samples with a spreading sequence for the signal instance,

channelizing the despread samples with a pilot channelization code to provide pilot symbols,

filtering the pilot symbols to provide an estimate or a channel response of the signal instance, and

multiplying the spreading sequence for the signal instance with the estimated channel response to provide the estimated pilot interference due to the signal instance.

32. The method of claim 30, wherein the processing the pilot-canceled data samples to derive the demodulated data for each of the at least one signal instance includes

despreading the pilot-canceled data samples with a spreading sequence for the signal instance,

channelizing the despread samples with a data channelization code to provide data symbols, and

demodulating the data symbols to provide the demodulated data for the signal instance.

33. The method of claim 30, wherein the subtracting includes

subtracting interference samples for the total pilot interference from the data samples for the received signal, wherein the interference samples

and data samples are both provided at a particular sample rate that is multiple times a chip rate.

34. A receiver unit in a wireless communication system, comprising:

a receiver configured to process a received signal comprised of a plurality of signal instances to provide data samples, wherein each signal instance includes a pilot; and

a demodulator including

a pilot interference estimator configured to process the data samples to derive an estimate of pilot interference due to each of one or more signal instances and to derive total pilot interference due to the one or more signal instances based on the estimated pilot interference,

a summer configured to subtract the total pilot interference from the data samples to derive pilot-canceled data samples, and

a data demodulation unit configured to process the pilot-canceled data samples to derive demodulated data for each of at least one signal instance in the received signal.

35. The receiver unit of claim 34, wherein the demodulator further includes

a channel estimator configured to provide an estimated channel response for each of the one or more signal instances.

36. The receiver unit of claim 35, wherein the pilot interference estimator is further configured to multiply processed pilot data for each of the one or more signal instances with the estimated channel response for the signal instance to provide the estimated pilot interference due to the signal instance.

37. The receiver unit of claim 34, wherein for each of the at least one signal instance the data demodulation unit is configured to despread the pilot-canceled data samples with a spreading sequence for the signal instance, channelize the despread samples with a data channelization code to provide data symbols, and demodulate the data symbols with pilot estimates for the signal instance to provide the demodulated data for the signal instance.

38. A terminal in a CDMA system comprising:

a receiver configured to process a received signal comprised of a plurality of signal instances to provide data samples, wherein each signal instance includes a pilot; and

a demodulator including

a pilot interference estimator configured to process the data samples to derive an estimate of pilot interference due to each of one or more signal instances and to derive total pilot interference due to the one or more signal instances based on the estimated pilot interference,

a summer configured to subtract the total pilot interference from the data samples to derive pilot-canceled data samples, and

a data demodulation unit configured to process the pilot-canceled data samples to derive demodulated data for each of at least one signal instance in the received signal.

39. The terminal of claim 38, wherein the demodulator further includes

a channel estimator configured to provide an estimated channel response for each of the one or more signal instances.

40. The terminal of claim 39, wherein the pilot interference estimator is further configured to multiply processed pilot data for each of the one or

more signal instances with the estimated channel response for the signal instance to provide the estimated pilot interference due to the signal instance.

41. The terminal of claim 38, wherein for each of the at least one signal instance the data demodulation unit is configured to despread the pilot-canceled data samples with a spreading sequence for the signal instance, channelize the despread samples with a data channelization code to provide data symbols, and demodulate the data symbols with pilot estimates for the signal instance to provide the demodulated data for the signal instance.

42. A base station in a CDMA system comprising:

a receiver configured to process a received signal comprised of a plurality of signal instances to provide data samples, wherein each signal instance includes a pilot; and

a demodulator including

a pilot interference estimator configured to process the data samples to derive an estimate of pilot interference due to each of one or more signal instances and to derive total pilot interference due to the one or more signal instances based on the estimated pilot interference,

a summer configured to subtract the total pilot interference from the data samples to derive pilot-canceled data samples, and

a data demodulation unit configured to process the pilot-canceled data samples to derive demodulated data for each of at least one signal instance in the received signal.

43. The base station of claim 42, wherein the demodulator further includes

a channel estimator configured to provide an estimated channel response for each of the one or more signal instances.

44. The base station of claim 43, wherein the pilot interference estimator is further configured to multiply processed pilot data for each of the one or more signal instances with the estimated channel response for the signal instance to provide the estimated pilot interference due to the signal instance.

45. The base station of claim 42, wherein for each of the at least one signal instance the data demodulation unit is configured to despread the pilot-canceled data samples with a spreading sequence for the signal instance, channelize the despread samples with a data channelization code to provide data symbols, and demodulate the data symbols with pilot estimates for the signal instance to provide the demodulated data for the signal instance.